WHAT IS CLAIMED IS:

1. A fiber amplifier comprising:

a first stage amplifier including a first fiber and a first pump laser diode, the first stage amplifier amplifying an input light by a predetermined gain;

a second stage amplifier including a second fiber and a second pump laser diode, the second stage amplifier receiving an output light of the first stage amplifier and generating a Raman gain;

a third stage amplifier including a third fiber and a third pump laser diode, the third stage amplifier amplifying the light output from the second stage amplifier by a predetermined gain; and

an automatic gain controller for receiving part of the light input to the first stage amplifier to check whether an input light power is varied.

2. A fiber amplifier comprising:

a first stage amplifier including a first fiber and a first pump laser diode, the first stage amplifier amplifying an input light by a predetermined gain;

a second stage amplifier including a second fiber and a second pump laser diode, the second stage amplifier receiving an output light of the first stage amplifier and generating a Raman gain;

a third stage amplifier including a third fiber and a third pump laser diode, the third stage amplifier amplifying the light output from the second stage amplifier by a predetermined gain; and

an automatic level controller for receiving part of the light input to the first stage amplifier to check whether an input light power of a specific channel is varied.

3. The fiber amplifier defined by claim 1 wherein when the input light power is varied, said automatic gain controller operates controlling pump powers of the second and third pump laser diodes respectively of the second and third stage amplifiers to obtain a constant gain, the second and third pump laser diodes being controlled in a state where a pump light of the first pump laser diode of the first stage amplifier is fixed; and

an automatic level controller for receiving part of the light input to the first stage amplifier to check whether an input light power of a specific channel is varied, and when the input light power of the specific channel is varied, controlling pump powers respectively of the second and third pump laser diodes of the second and third stage amplifiers to obtain a constant output power level, the pump powers of the second and third pump laser diodes being controlled in a state where a pump light of the first pump laser diode of the first stage amplifier is fixed.

4. The fiber amplifier of claim 1, wherein the second fiber is a dispersion compensating fiber.

5. The fiber amplifier of claim 4, wherein one of the first and third fibers is an Erbium doped fiber.

6. The fiber amplifier of claim 1, further comprising a gain flattening filter coupled between the second and third stage amplifiers for flattening an output gain.

7. The fiber amplifier of claim 1, wherein the automatic gain controller comprises:

a photodetector for receiving part of an input light of the first stage amplifier, and outputting an electrical signal corresponding to power of the input light; and

a controller for checking whether the input light power is varied based on the electrical signal output by the photodetector, and controlling the second and third pump laser diodes using pump powers corresponding to the varied power of the input light.

8. The fiber amplifier of claim 7, wherein the second fiber is a dispersion compensating fiber, and

the controller performs a delay by an amount of time equal to the transit time of the dispersion compensating fiber to control the second and third pump laser diodes.

9. The fiber amplifier of claim 7, wherein the automatic gain controller further comprises a lookup table for storing driving current values of pump laser diodes corresponding to the electrical signal value input to the controller, and

the controller searches for driving current values of the pump laser diodes corresponding to the electrical signal in the lookup table when the electrical signal output by the photodetector is found to be varied, and controls the second and third pump laser diodes based on the driving current value found in the lookup table.

10. The fiber amplifier of claim 2, wherein the automatic level

controller comprises:

an optical filter for receiving part of the input light of the first stage amplifier, and filtering out light that is not of a specific channel;

a photodetector for outputting an electrical signal corresponding to a light power of the specific channel output by the optical filter; and

a controller for checking whether a light power of the specific channel is varied based on the electrical signal corresponding to the power of the light of the specific channel output by the photodetector, and controlling the second and third pump laser diodes using pump powers corresponding to the light power of the varied specific channel.

11. The fiber amplifier of claim 10, wherein the second fiber is a dispersion compensating fiber, and

the controller performs a delay by an amount of time equal to the transit time of the dispersion compensating fiber to control the second and third pump laser diodes.

12. The fiber amplifier of claim 10, wherein the fiber amplifier further comprises a lookup table for storing driving current values of pump laser diodes corresponding to the electrical signal value input to the controller, and

the controller searches for driving current values of the pump laser diodes corresponding to the electrical signal in the lookup table when the electrical signal output by the photodetector is found to be varied, and controls the second and third pump laser diodes based on the driving current values found in the lookup table.

13. A control method of a fiber amplifier including a first stage

amplifier that has a first fiber and a first pump laser diode for amplifying an input light by a predetermined gain, a second stage amplifier that has a second fiber and a second pump laser diode for receiving an output light of the first stage amplifier and generating a Raman gain, and a third stage amplifier that has a third fiber and a third pump laser diode for amplifying the light output from the second stage amplifier by a predetermined gain, comprising:

(a) monitoring variations in an input power of a light input to the first stage amplifier;

(b) finding pump powers corresponding to the varied input power; and

(c) controlling the second and third pump laser diodes based on the found pump powers to obtain a constant gain.

14. A control method of a fiber amplifier including a first stage amplifier that has a first fiber and a first pump laser diode for amplifying an input light by a predetermined gain, a second stage amplifier that has a second fiber and a second pump laser diode for receiving an output light of the first stage amplifier and generating a Raman gain, and a third stage amplifier that has a third fiber and a third pump laser diode for amplifying the light output from the second stage amplifier by a predetermined gain, comprising:

(a) monitoring variations in an input power of a light of a specific channel input to the first stage amplifier;

(b) finding pump powers corresponding to the varied input power of the light of the specific channel; and

(c) controlling the second and third pump laser diodes based on the found pump powers to obtain a constant output power level.

15. The control method of claim 13, wherein the second fiber is a dispersion compensating fiber, and

(c) comprises performing a delay by an amount of time equal to the transit time of the dispersion compensating fiber to control the second and third pump laser diodes.

16. The control method of claim 13, wherein (a) comprises:

receiving part of the light input to the first stage amplifier;

outputting an electrical signal corresponding to a power of the input light; and

checking whether the input light power is varied based on the output electrical signal value.

17. The control method of claim 14, wherein (a) comprises:

receiving part of the light input to the first stage amplifier;

filtering out light of the received light except the light of the specific channel;

outputting an electrical signal corresponding to a power of the filtered light of the specific channel; and

checking whether the input light power of the specific channel is varied based on the output electrical signal value.

18. The control method of claim 16, wherein (b) comprises:

checking whether the input electrical signal value is varied; and

searching for a driving current value of the pump laser diode

corresponding to the electrical signal value in a lookup table.

19. The control method of claim 18, wherein (c) comprises: controlling one of the second and third pump laser diodes based on the driving current value found by searching the lookup table.

20. The fiber amplifier defined by claim 1 wherein when the input light power is varied, said automatic gain controller operates controlling pump powers of the second and third pump laser diodes respectively of the second and third stage amplifiers to obtain a constant gain, the pump powers of the second and third pump laser diodes being controlled in a state where a pump light of the first pump laser diode of the first stage amplifier is fixed.

21. The fiber amplifier defined by claim 2 wherein when the input light power of the specific channel is varied, said automatic level controller operates controlling pump powers of the second and third pump laser diodes respectively of the second and third stage amplifiers to obtain a constant output power level, the pump powers of the second and third pump laser diodes being controlled in a state where a pump light of the first pump laser diode of the first stage amplifier is fixed.